START

0023141

SEP 02 1992 Sta. 21 (20)

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 159726

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
R. A. Carlson 200/300 Remedial Investigation	200/300 Remedial Investigation	N/A
5. Proj./Prog./Dept./Div.:	**6. Cog. Engr.:**	**7. Purchase Order No.:**
300-FF-5/ERE/200/300 Rem. Investigation	L. C. Hulstrom	N/A
8. Originator Remarks: Approval / Release		**9. Equip./Component No.:** N/A **10. System/Bldg./Facility:** N/A
11. Receiver Remarks:		**12. Major Assm. Dwg. No.:** N/A **13. Permit/Permit Application No.:** N/A **14. Required Response Date:** 9/2/92

9312750415

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Impact Level	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1.	WHC-SD-EN-AP-107		0	300-FF-5 Operable Unit Field Sampling Plan for Tasks 5B & 5C - Riverbank Springs and Near-Shore River Water and Sediment	4	1	1	1

16. KEY

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
1	1	Cog.Eng. L.C. Hulstrom	LC Hulstrom	8/27/92	H4-55	Central Files (2)			1804		
1	1	Cog. Mgr. R. A. Carlson	LC Hulstrom for	8/27/92	H4-55						
X		QA N/A									
X 8/27/92		Safety N/A									
		Env. N/A									
3		EDMC (2)			H4-22						
3		IRA Clearance			H4-17						

SEP 1992 RECEIVED EDMC

18. Signature of EDT Originator / Date	19. Authorized Representative for Receiving Organization / Date	20. Cognizant/Project Engineer's Manager / Date	21. DOE APPROVAL (if required) Ltr. No.
LC Hulstrom 8/27/92	LC Hulstrom for RA Carlson 8/27/92	LC Hulstrom for RA Carlson 8/31/92	[] Approved [] Approved w/comments [] Disapproved w/comments

BD-7400-172-2 (07/91) GEF097

BD-7400-172-1 (02/89)

Date Received: 8/28/92	INFORMATION RELEASE REQUEST	Reference: WHC-CM-3-4

Complete for all Types of Release

Purpose

[ ]	Speech or Presentation		[ ]	Reference
	[ ] Full Paper	(Check only one suffix)	[X]	Technical Report
	[ ] Summary		[ ]	Thesis or Dissertation
	[ ] Abstract		[ ]	Manual
	[ ] Visual Aid		[ ]	Brochure/Flier
[ ]	Speakers Bureau		[ ]	Software/Database
[ ]	Poster Session		[ ]	Controlled Document
[ ]	Videotape		[ ]	Other

ID Number (include revision, volume, etc.): WHC-SD-EN-AP-107, Rev. 0

List attachments: N/A

Date Release Required: 9/2/92

Title: 300-FF-5 Operable Unit Field Sampling Plan for Tasks 5B and 5C - Riverbank Springs and Near-Shore River Water and Sediment

Unclassified Category: UC- N/A

Impact Level: 4

New or novel (patentable) subject matter? [X] No [ ] Yes
If "Yes", has disclosure been submitted by WHC or other company?
[ ] No [ ] Yes Disclosure No(s).

Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions?
[X] No [ ] Yes (Identify)

Copyrights? [X] No [ ] Yes
If "Yes", has written permission been granted?
[ ] No [ ] Yes (Attach Permission)

Trademarks?
[X] No [ ] Yes (Identify)

Complete for Speech or Presentation

Title of Conference or Meeting: N/A

Group or Society Sponsoring:

Date(s) of Conference or Meeting: N/A

City/State:

Will proceedings be published? [ ] Yes [ ] No
Will material be handed out? [ ] Yes [ ] No

Title of Journal: N/A

CHECKLIST FOR SIGNATORIES

Review Required per WHC-CM-3-4	Yes	No	Reviewer - Signature Indicates Approval: Name (printed)	Signature	Date
Classification/Unclassified Controlled Nuclear Information	[ ]	[X]			
Patent - General Counsel	[X]	[ ]	S.W. BERGLIN	S.W. Berglin	9/2/92
Legal - General Counsel	[X]	[ ]			
Applied Technology/Export Controlled Information or International Program	[ ]	[X]			
WHC Program/Project	[ ]	[X]			
Communications	[ ]	[X]			
RL Program/Project	[ ]	[X]			
Publication Services	[X]	[X]	L.A. BROWN	L.A. Brown	9/3/92
Other Program/Project	[ ]	[X]			

Information conforms to all applicable requirements. The above information is certified to be correct.

	Yes	No
References Available to Intended Audience	[X]	[ ]
Transmit to DOE-HQ/Office of Scientific and Technical Information	[ ]	[X]

Author/Requestor (Printed/Signature) Date
L. C. Hulstrom L.C. Hulstrom 8/27/92

Intended Audience
[X] Internal [X] Sponsor [X] External

Responsible Manager (Printed/Signature) Date
R. A. Carlson L.C. Hulstrom for 8/27/92

INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP

Stamp is required before release. Release is contingent upon resolution of mandatory comments.

APPROVED FOR RELEASE OFFICIAL DOCUMENT LS Date 9/2/92

Date Cancelled | Date Disapproved

SUPPORTING DOCUMENT

1. Total Pages 44

2. Title

300-FF-5 Operable Unit Field Sampling Plan for Tasks 5B and 5C - Riverbank Springs and Near-Shore River Water and Sediment

3. Number

WHC-SD-EN-AP-107

4. Rev No.

0

5. Key Words

300-FF-5, Springs, Seeps, Near-shore

APPROVED FOR PUBLIC RELEASE

9/2/92 M. Gates

6. Author

Name: L. C. Hulstrom

L.C. Hulstrom 9/2/92

Signature

Organization/Charge Code 81222/ PC2KA

7. Abstract

8. PURPOSE AND USE OF DOCUMENT - This document was prepared for use within the U.S. Department of Energy and its contractors. It is to be used only to perform, direct, or integrate work under U.S. Department of Energy contracts. This document is not approved for public release until reviewed.

PATENT STATUS - This document copy, since it is transmitted in advance of patent clearance, is made available in confidence solely for use in performance of work under contracts with the U.S. Department of Energy. This document is not to be published nor its contents otherwise disseminated or used for purposes other than specified above before patent approval for such release or use has been secured, upon request, from the Patent Counsel, U.S. Department of Energy Field Office, Richland, WA.

DISCLAIMER - This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

9. Impact Level 4

10. RELEASE STAMP

OFFICIAL RELEASE BY WHC DATE SEP 0 2 1992 Sta. 21

9312750417

THIS PAGE INTENTIONALLY
LEFT BLANK

CONTENTS

CONTENTS (cont)

APPENDICES

FIGURES

TABLE

1.0 PURPOSE

This work is part of Task 5 - Surface Water and Sediment Investigation from the *Remedial Investigation/Feasibility Study Work Plan for the 300-FF-5 Operable Unit Hanford Site, Richland, Washington* (DOE-RL 1990). This document was prepared to provide a detailed sampling plan to supplement the work plan field sampling plan for springs/seeps and river water, along with sediments, so that analytical results can satisfy the data quality objectives for this task.

2.0 SCOPE

This sampling plan applies to sampling of springs, near shore river water, sediments of the Columbia River, and selected wells in the 300-FF-5 Operable Unit area.

3.0 DEFINITIONS

Spring/seep. An area along the bank of the Columbia River where groundwater is discharging to the surface.

Drive point. A commercially available device commonly used to create a small diameter well.

4.0 RESPONSIBILITIES

Specific individual responsibilities may vary depending on the magnitude of sampling effort. Personnel will be assigned to the effort and their responsibility designated by the field team leader. The following descriptions are presented as general guidelines.

4.1 FIELD TEAM LEADER

The field team leader is responsible for:

- Directing field operations
- Coordinating Kaiser Engineers Hanford (KEH), Westinghouse Hanford Company (Westinghouse Hanford), and Pacific Northwest Laboratory (PNL) support activities
- Maintaining field logbooks
- Coordinating collection, transportation, and shipment of samples

- Acquiring sample numbers and maintaining chain of custody.

4.2 SAMPLER

The sampler reports to the field team leader and is responsible for:

- Installation of sample site improvements and location markers
- Completing appropriate forms as directed for each sample
- Ensuring the proper sample containers are used
- Containerizing, labeling, and sealing individual water and sediment samples
- Maintaining field custody for all samples pending transportation to the analytical laboratory
- Performing decontamination of sampling equipment
- Conducting required field measurements.

5.0 SAFETY REQUIREMENTS

All sampling activities shall comply with applicable site-specific job safety analysis requirements for the areas being sampled. In addition, a 'tailgate' safety meeting will be conducted before the beginning of work each day to brief field personnel on specific hazards anticipated for that day's effort. Activity specific safety concerns are detailed in Section 6.0.

5.1 RADIOLOGICAL SAFETY

Sampling activities conducted in areas under radiological control will require a radiation work permit. Before sampling is initiated a radiological survey shall be performed in the immediate vicinity of the site(s) to be sampled to determine site-specific background radiation levels. Sample containers shall be closed and sealed while still inside the posted boundaries of the controlled area. Sample containers shall not be permitted to leave the controlled area until exterior surfaces are found to be free of removable radioactive contamination. The determination of the presence or absence of removable radioactive contamination shall be accomplished using standard wipe/counting methods.

During sampling activities all protective clothing and/or waste that are used or generated shall be controlled in a manner that protects it from undue exposure to the elements (e.g., wind, rain, etc.) and prevents inadvertent loss of control.

Used protective clothing and waste that are generated during the sampling activities conducted in radiologically controlled areas shall be containerized, surveyed, labeled, and transported to appropriate storage or disposal areas at completion of activities. Upon completion of sampling activities, surface radiological contamination levels shall be determined; radiological contamination levels in excess of pre-sampling levels shall be remediated prior to cessation of activities in that area.

5.2 RECORDS

The field team leader is responsible for processing field generated records in accordance with Environmental Investigation Instruction (EII) EII 1.6 "Records Management" (WHC 1989).

5.3 TRAINING

Personnel directly involved with the collection and handling of sediment and water samples shall be trained to meet the requirements of 29CFR 1910.120; documentation of such training is available at PNL. All onsite personnel will possess proof-of-training for hazardous chemical and radiation training.

5.4 TIMING

Spring/seep sampling conducted to yield samples representative of true groundwater discharges to the Columbia River must be accomplished during periods of near to below average river discharge. A daily average river flow rate of approximately 50,000 ft^3/s is desired. Late summer to early spring river flows historically meet this condition.

6.0 PROCEDURE

6.1 SAMPLE LOCATION MARKING

All sampling locations will be surveyed by KEH. Sampling locations will be marked and are provided in Figure 1. Sampling locations will be clearly marked on the shoreline above the high-water line by two markers that form a 'range' defining a line. This will allow individual sampling points to be relocated for any subsequent event. Groundwater wells will be located and identified prior to the field sampling.

- The 'range' will be installed so that the spring is online with the range
- Range markers will be installed above the high-water mark
- Markers must be highly visible and durable to resist exposure and weathering. Metal fence posts (painted fluorescent orange) are a type of marker that meet these criteria

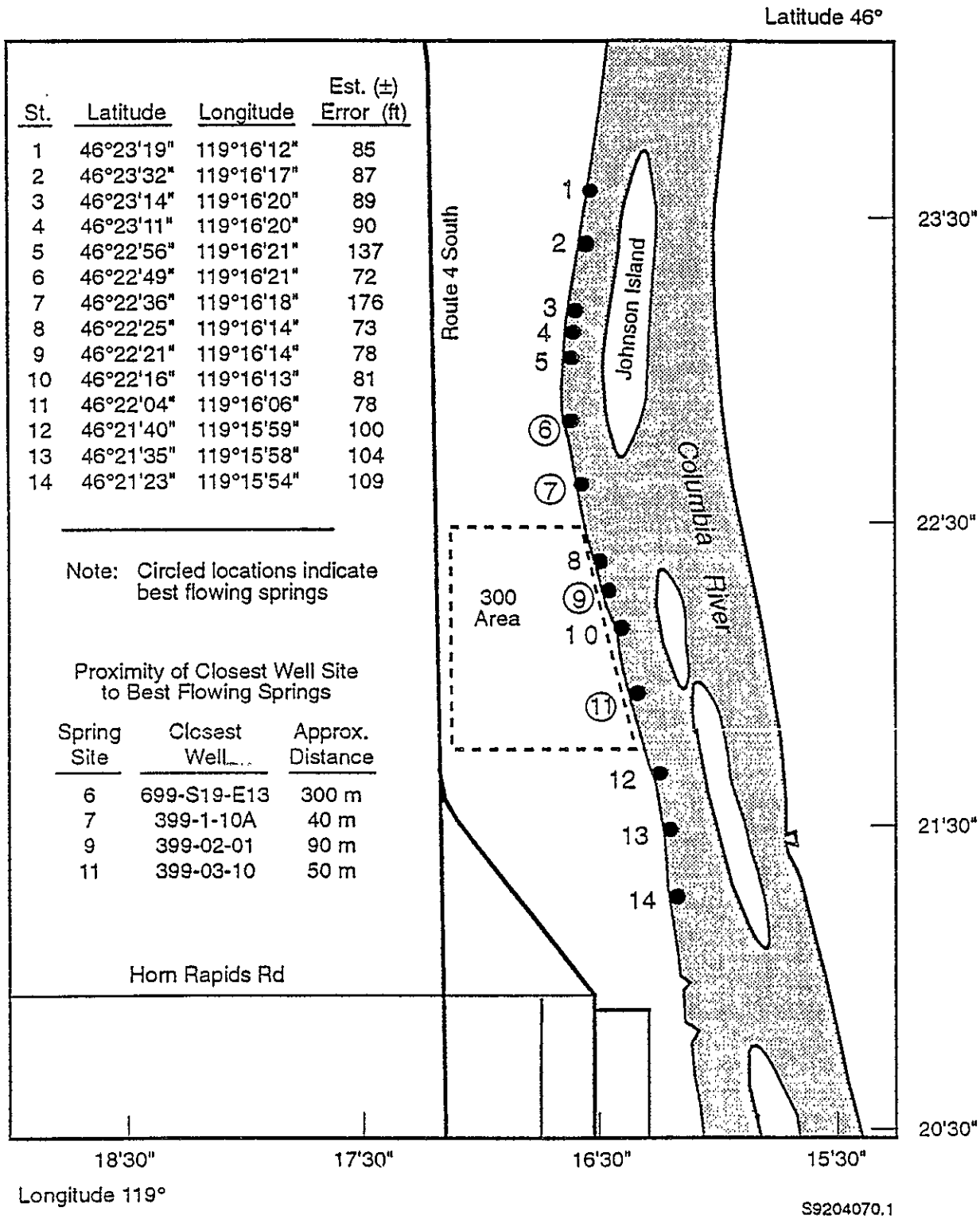

Figure 1. 300-FF-5 Operable Unit Spring Sites.

- The distance from the marker nearest the river to the sampling point will be measured using either a cloth or steel tape to the nearest 1-ft (30.48-cm) increment and recorded in a controlled logbook

- Where feasible the range markers will be driven into the sediments using either a sledge hammer or fence-post driver

- Where posts cannot be driven, they will be installed using a wire mesh-supported cairn.

Care should be used when installing the range markers as there is potential danger of pinching hands during post installation. Leather gloves must be worn during this activity. Proper lifting techniques are essential when securing the markers using the wire-mesh cairn.

6.2 SAMPLE COLLECTION SEQUENCE

Sampling of sediments shall precede spring/seep groundwater sampling when both media are to be sampled at a single site. This is to accommodate the probable necessity of improving individual seeps and spring to direct water to a sampling point.

- Collect sediment sample prior to spring/seep improvement. This will ensure representativeness of the sediment sample.

- Spring/seep samples and surface water samples (Columbia River) are to be collected contemporaneously.

- Coordinate spring/seep and surface water sampling with sampling of groundwater conducted at nearby monitoring wells if possible.

- Due to the nature of the spring discharges, no preferred order of water sample collection is necessary.

- Conformance with EII 10.3 "Purgewater Management" (WHC 1989) is not required, since none of the wells to be sampled require groundwater collection.

- Water samples shall be collected in conformance with the "Surface Environmental Surveillance Procedures Manual" (PNL 1990) for surface waters and "Procedures for Ground-Water Investigations" (PNL 1991) for wells. These procedures are essentially equivalent to those found in WHC (1989). More specific sampling procedures are presented below.

- Sample identification numbers, chain of custody, labels, field record forms, and sample analysis orders will be assigned or supplied by PNL; Hanford Environmental Information System number from Office of Sample Management.

6.3 COLLECTION OF SEDIMENT SAMPLES

Sediment samples are to be collected from areas where springs/seeps emanate from the riverbank. These sediments are to be used to assess the accumulation of contaminants through the sorption process. For this reason only sediments less than or about 2-mm in diameter are appropriate (this size requirement is an approximation only, which may vary with field conditions). Because of the nature of the river substrate, fine sediment accumulation may or may not be present at a station. If no fine sediment material is found, record this observation in the field logbook and move to the next collection location.

Two methods of sample collection are available for gathering sediment samples; excavation and vacuum extraction. General procedures described in EII 5.2 "Soil and Sediment Sampling (WHC 1989) are to be followed with the following alterations. Two methods are acceptable, excavation and peristaltic pump. Because of sampling in shallow water the excavation method is recommended.

6.3.1 Excavation Sampling

- Personnel will don new latex or nitrile gloves prior to each sampling event and between sediment sampling and water sampling activities to reduce potential for cross contamination of samples.
- Use a decontaminated (per Section 6.7) stainless steel trowel or similar size implement.
- Collect sediments from the vicinity of where the springs/seeps first discharge from the riverbank.
- Sediments will be gathered from the surface to a maximum depth of 4 in. and placed in the appropriate container(s).
- Note in the controlled logbook (per Section 6.8) the approximate size of the area sampled to meet the volume requirements.
- Decant excess water from the sample container(s).
- Immediately after collection seal, label, and place sample on ice.

6.3.2 Vacuum Sampling via Peristaltic Pump

- Use new C-Flex (a trade name of Cole-Parmer Instruments Company) tubing at each site
- Work the intake portion of the sampler between the coarse materials so that the fine interstitial materials enter the collector
- Decant water from sample accumulator regularly
- Collect sample from the surface to a maximum depth of 4 in.

- Transfer the sediments from the collection system to the sample bottle(s) immediately following collection
- Immediately after collection seal, label, and place sample on ice.

6.4 PREPARATION OF SAMPLES FOR OFFSITE SHIPMENT

Samples transported offsite or to uncontrolled areas/facilities on the Hanford Site require radiological release. A representative split (water and sediment) (i.e., a small vial sufficient to contain a minimum of 1 g) from each site sampled shall be submitted for radiological release counting purposes.

6.5 PREPARATION OF SPRING/SEEP SAMPLING POINT

An initial survey of the known spring/seep areas will be made to ascertain if naturally occurring zones of accumulation are present that permit sample collection without improvement. If no such accumulation zone can be located, improvement of the spring will be necessary. Two methods are acceptable, drive point or surface accumulation area. Surface accumulation is the recommended sampling method.

6.5.1 Installation of a Drive Point

- Attach short segment of standard steel pipe to the drive point (this serves to protect the point during installation). Both drive point and steel pipe should be decontaminated.
- Align the drive point and steel pipe so that they will penetrate the sediments at a moderate angle, e.g., $\leq 20°$ from horizontal, vertical depth of penetration should not exceed 1 ft (30.48 cm).
- Using a sledge hammer or fence-post driver, drive the steel pipe and attached drive point into the riverbank until the screened area is fully covered.
- Remove the steel pipe from the drive point.
- If needed for sampling, a short length of decontaminated stainless steel pipe may be threaded onto end of the drive point to aid sample collection.

Special safety considerations are involved in this method. Extreme care must be taken when installing the drive point into the riverbank. Safety goggles are essential to protect against metal spalls from either the sledge, steel pipe, or the drive point. Hands are potentially subject to impact from the sledge hammer or post driver. Leather gloves should be worn for protection from metal slivers. Footing may be tenuous due to wet and/or slippery and steep surfaces.

6.5.2 Preparation of Surface Accumulation Area

- Select an area where the springs/seeps produce noticeable flow at the surface.
- Selectively remove cobbles, boulders, etc., to create an accumulation basin.
- Removed sediments may be used to create a dam around the excavated area.
- Channel spring/seep discharges to the collection point.
- If necessary, the accumulation basin may be lined with clean sheet plastic or decontaminated stainless steel bowl.

Special safety considerations are involved in this method. Extreme care must be taken when lifting and moving large rocks. Surfaces at the springs/seeps are likely to be slippery due to the water and due to accumulation of algae or slime. Slip, trip, and fall hazards may be present, as well as stress to lower back from frequent lifting under non-ideal conditions. Additional hazard may exist due to potential over steepening of the bank and may cause sloughing from above. Caution must be exercised during these activities.

6.5.3 Preliminary Sampling of Springs/Seeps - Sample Collection

Active flows will be sampled at low river flow to minimize bank storage effects, to maximize the potential for the seeps to be actively flowing, and to maximize the impact of the contaminated groundwater entering the river during simultaneous near-shore river sampling.

Spring water and sediment (the material through which the seepage is flowing) will be collected from the identified spring locations which are actively flowing. Prior to taking the required water and sediment samples from the identified spring locations, three of the dominant springs and three nearby groundwater wells will be monitored hourly for water temperature, pH, and conductivity following the procedure described below. Every 4 h, nitrate, phosphate, and potassium concentrations will be measured in the field from the three springs and three well sites; refer to the Hach Kit (a trade name of Hach Chemical Company) standard operating procedures for nitrate, phosphate, and potassium field methods and instrument calibration requirements.

As soon as the field measurements show that groundwater is being measured, or when the river is starting to rise, water and sediment samples will be collected from each of the identified spring locations, with the measurement of water temperature, pH, conductivity, nitrate, phosphate, and potassium.

Groundwater will be assumed to be flowing from the seeps when field measurements remain constant for two consecutive sampling periods after initial measurements and these measurements are indicative of groundwater and not river water. Field personnel will monitor and plot trends in field measured parameters and will look for changes in slopes of the plotted data to

assist in determining when groundwater is being measured. Table 18 of DOE-RL (1990) identifies specific conductance measurements of Columbia River water at the Richland Pumphouse ranging from 127 to 150 microseimens (μS) in 1987. Data from 300 Area groundwater collected in December 1991 and April 1992 ranged from approximately 300 to 600 μS.

6.5.4 Seep/Spring Water Sample Collection

Sampling containers and appropriate supporting documentation will be supplied to PNL field teams prior to sampling. A break down of the maximum number of samples that will be collected by sampling parameter is shown in Table 1, with more specific details provided in Appendix A. Holding times, appropriate sampling containers, and required sample volumes for each of the participating laboratories are given in Appendix B.

Table 1. Matrix of Sampling Parameters for the 300-FF-5 Spring/Seep Study (for additional details see Appendix A).

Constituents	Springs*	Spring sediment	Wells**	River water+
VOA(ww)	10	10	3	40
metals(fw)	10	10	3	40
metals(ww)	10	10	3	40
nuclide(ww)	10	10	3	40
anions(ww)	10	10	3	40
other(ww)	10	--	3	40
samples/ matrix	10	10	3	40
QA	1	1	1	4
Total samples	11	11	4	44

ww = whole water sample.
fw = filtered water sample.
* 10 Springs/one sample per spring.
** 3 Groundwater Wells/one sample per well.
\+ 10 river stations/4 samples per station.

NOTE: QA samples includes field duplicates. Trip blanks, filter blanks, equipment blanks must be included. The numbers do not reflect the actual number of HEIS numbers to be assigned to individual samples. "Other" refers to specific tests such as coliform, TOC, etc. that are specified in Appendix A.

A maximum of 10 springs will be sampled once it has been determined that groundwater is flowing, as discussed previously. Decision criteria for what springs to sample will be determined at the start of the field effort and will be primarily based on seep flow rates.

- Personnel will don new latex or nitrile gloves prior to each sampling event to reduce the potential for sample cross contamination.
- Measure and record temperature, pH, conductivity, nitrate, phosphate, and potassium concentrations of spring discharge and wells at 4-h intervals. If the site being sampled is being influenced by direct sunlight, shade the sample site to help stabilize induced thermal variations.
- Collect sample directly from the end of drive point if used or from the end of the stainless steel pipe attached to the drive point.
- The area immediately below the discharge point of the drive point or attached pipe may be modified to facilitate filling of the sample bottles.
- When the above options cannot be used, the water may be discharged into a decontaminated stainless steel bowl (per Section 6.7.2) and then transferred to the sample containers using a peristaltic pump and the type of pump tubing will be recorded in the controlled logbook.
- In instances where the spring was improved by construction of an accumulation area, samples will be transferred into sample containers by pumping directly from the accumulation area using a peristaltic pump and the type of tubing will be recorded in the controlled logbook.
- Filter the sample for dissolved metals analysis, collecting both filtered and unfiltered samples.
- Immediately after collection add appropriate preservative if required, seal label, and place sample on ice.
- Discard any used flexible tubing between sampling events/locations to prevent possible cross contamination. Segregate discarded tubing by placing in a sealable plastic bag and marking the bag with the sampling location. All wastes, except that generated in areas under radiological control, will be contained and controlled in accordance with EII 4.2 "Interim Control of Unknown, Suspected Hazardous and Mixed Waste" (WHC 1989). Wastes generated from areas under radiological control will be handled in accordance with "Waste Management and Environmental Compliance" (PNL 1989), and "Radiation Protection" (PNL 1992).

6.5.5 Well Water Sample Collection

Prior to field sampling details will be provided to the field team regarding well locations. A total of three wells will be sampled. Four candidate wells have been identified on Figure 1. Sampling procedures will follow those described in "Procedures for Ground-Water Investigations", (PNL 1991). These wells also have automated water level measurement recorders installed in them or in adjacent wells monitoring the unconfined aquifer. If necessary, manual water level measurements will be made prior to each sampling event.

6.6 NEAR-SHORE RIVER WATER SAMPLING

Near-shore river water samples will be collected adjacent to the springs to indicate the impact of spring/seepage zone discharges on river water chemistry. Four river water samples will be collected for each spring sampled, not including the spring water sample. Figure 2 shows the relative sampling locations with respect to the discharge point of the spring. Location 1 provides a site-specific background immediately upstream, yet out of the influence, of the seep itself. Location 2 represents a point of maximum influence from the seepage of contaminated water into the river. Locations 3 and 4 are positioned to provide information on the extent of the area influenced by the seep entering the river. The actual positions of locations 3 and 4 will be determined by conducting a simple dye test to determine how the spring water mixes in the river. If the seepage is over a general area of the shoreline rather than a specific spring, then location 1 will be upstream of the farthest upstream edge of the discharge area. Similarly, location 2, in this case, would be at the downstream edge of the discharge area. Samples will be collected as near to the bottom as possible without disturbing the bottom sediments.

Near-shore sampling will be conducted concurrent with sampling of riverbank springs. Field measurements will be consistent with those conducted on the spring samples, including temperature, pH, conductivity, nitrate, phosphate, and potassium.

6.6.1 Sample Site Location

- Samples will be collected as near to the range line as possible.
- All samples will be collected from areas of moving water.
- The location of the sampling position will be recorded in the field activity daily log or controlled logbook.

6.6.2 Sample Depth

- Samples will be collected in the river where water depth is less than or equal to 3 ft (91.44 cm), at a maximum distance of 0.5 ft (15.24 cm) above the bottom.

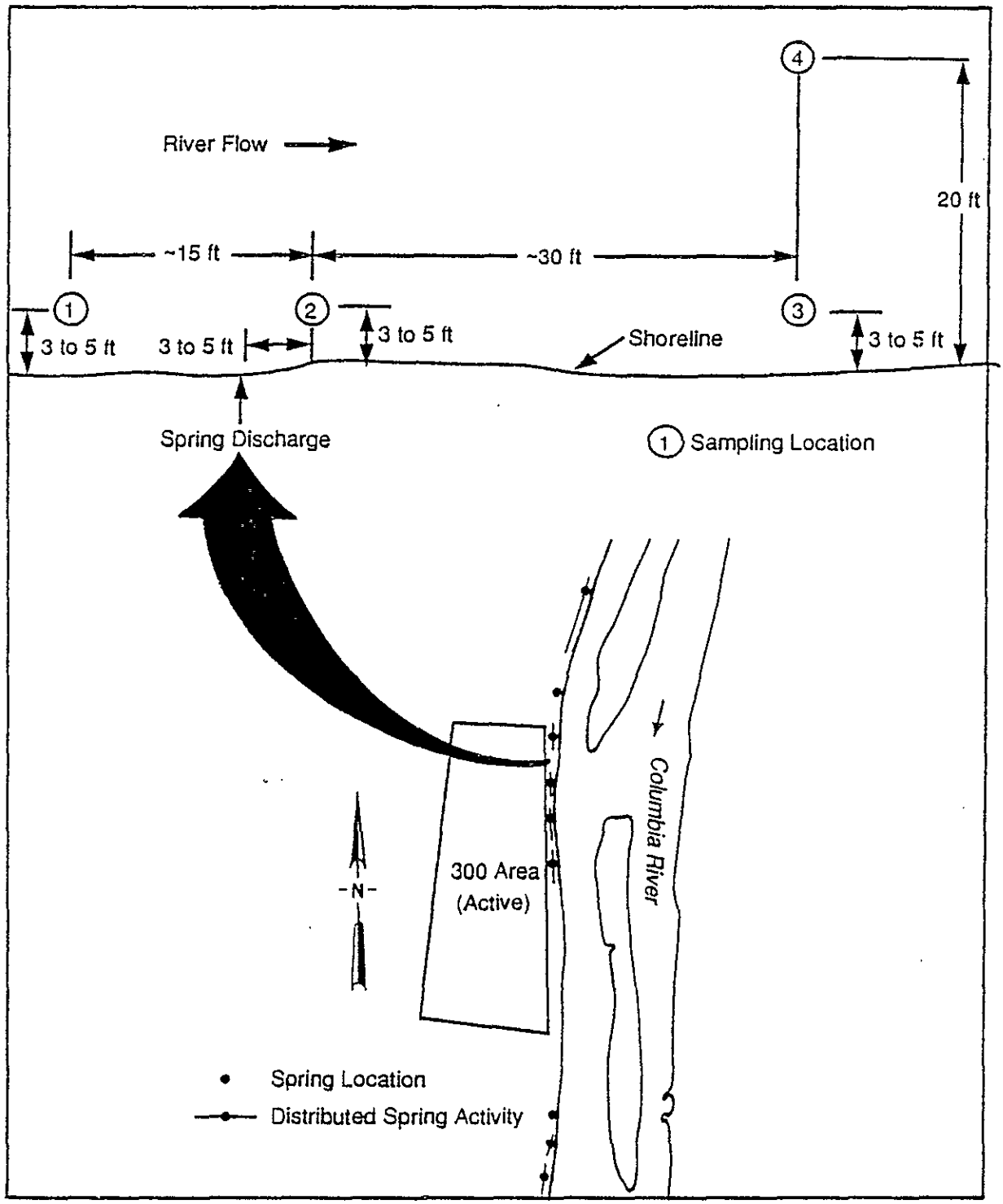

Figure 2. Near-Shore River Water Sampling Locations Relative to Spring Discharge.

- Water depth will be determined by using a wading staff marked in feet and tenths of feet.

6.6.3 Sample Collection

Samples may be collected using either of three methods; direct filling of the sampling bottle (if no preservative is present in bottle), direct fill sampler or, use of a peristaltic pump. The methods used and the materials/equipment used should be documented in the controlled logbook.

6.6.3.1 Direct Sampling

- Rinse sampling bottle with river water several times and lower sampling bottle to selected depth
- For direct fill sampler allow flow through for a minimum of 10 seconds at the desired sampling depth
- Close containers while holding at sampling depth
- If direct fill sampler is used transfer the collected sample to the filter apparatus or sample container
- Filter the sample collected for ICP metals (filtered)
- Immediately after collection seal, label, and place sample on ice.

6.6.3.2 Peristaltic Pump Sampling

- Determine desired sampling depth (0 to 0.5 ft [14.24 cm] above bottom)
- Attach new C-Flex peristaltic tubing to wading staff at desired depth
- Install tubing on pump according to manufacturer's instructions
- Actuate pump and collect samples in appropriate containers
- Filter the sample collected for ICP metals (filtered)
- Immediately after collection seal, label, and place sample on ice.

Working in and around moving water in the Columbia River creates specific hazard exposures. The buddy system will be used whenever samples are being collected in the river. A life-line will be attached to the in-river sampler and controlled by the onshore 'buddy'. In addition, an inflatable 'Mae West' floatation device will be worn. Hip or chest-high waders shall be worn during sample collection. In no case shall the river be entered while barefoot. Slip, trip, and fall hazards are normal when working in moving water, care must be taken to ensure positive footing. Hypothermia is a hazard.

6.7 SAMPLE CONTAINERS

All glassware and plastic ware used to contain and ship samples shall be purchased 'certified clean'. Lot numbers of bottles used shall be recorded in the field logbook.

6.7.1 Sediment

Sediment samples will be collected in the containers listed in Appendix B. Following collection and labeling all sediment samples will be placed in an ice chest and cooled with frozen 'blue ice' or double bagged ice.

6.7.2 Water

Water samples from springs/seeps, wells, and the Columbia River will be collected and transported in the containers listed in Appendix B. Following collection and labeling all water samples will be placed in an ice chest and cooled with frozen 'blue ice' or doubly bagged ice.

6.8 DECONTAMINATION OF EQUIPMENT

Decontamination of sampling equipment shall be done in accordance with EII 5.4 "Field Decontamination of Drilling, Well Development and Sampling Equipment" (WHC 1989). Cleaning per EII 5.5 "1706 KE Laboratory Decontamination of RCRA/CERCLA Sampling Equipment" (WHC 1989) is not required for this project, in accordance with an approved Instruction Change Authorization.

6.8.1 Sediment Sampling Equipment

Sediment sampling equipment shall be decontaminated at the start of each day's activity and between sampling locations. Decontamination shall consist of the following:

- Scrubbing the instrument in river water to remove coarse material
- Wash and scrub using Alconox (a trade name of Alconox Incorporated) or equivalent detergent solution
- Rinse twice using commercially available distilled or deionized water
- Wrap in clean plastic wrap pending use at next sample location
- Any flexible peristaltic tubing used shall be discarded and new tubing used for subsequent sample collection.

6.8.2 Water Sampling Equipment

Water sampling and filtering equipment shall be decontaminated between sampling locations. Decontamination shall consist of the following:

- Equipment contacting sample shall be rinsed in river water to remove any sediments
- Wash and scrub, if possible, the interior and exterior using Alconox or equivalent detergent solution
- Rinse twice using commercially available distilled or deionized water
- Wrap in clean plastic pending use at next sampling event
- Any flexible tubing used in peristaltic pump system shall be discarded and new tubing used for subsequent sample collection.

6.9 FIELD MEASUREMENTS

Site characteristics shall be recorded in the sampling log or controlled notebook prior to and during the sampling events. A new page is necessary for each sampling location. These measurements will be performed using field electronic instruments and consist of the following:

- Record date, time, and names of sample crew members
- Water Temperature: record temperature to nearest 0.5°C once at beginning of sample period and once at end
- Time: record start and finish times for each sampling segment; sediments, spring/seep, wells and river, use 24-h clock and record to nearest minute
- pH: record to nearest 0.1 pH unit
  - Calibrate instrument at beginning and completion of each day of field activity using standards pH 4.0, 7.0 and 10, following manufacturers instructions for the instrument used
  - Record adjustments on Field Instrument Calibration Log.
- Specific Conductivity: record to nearest 10 μS
  - Calibrate instrument daily, following manufacturers instructions for the instrument used
  - Calibrate using a standard solution of 1,000 μS. An additional standard solution of 500 μS will be used if available
- Nitrate, Phosphate, and Potassium: record according to the manufacturers' instructions provided with each Hach Kit
  - Calibrate instrument daily, following manufacturers instructions for the instrument used
- Unusual Occurrences: record when appropriate.

- Flow Rate: record approximate discharge rate of springs/seeps
  - Where samples are collected through a drive point discharge report both a visual estimate and an estimate based on the rate of filling a known volume container (e.g., 1 L/min)
  - Where samples are collected from a surface accumulation area visually estimate the discharge rate
  - River discharge rate will be determined from discharge records based on time of collection.

- Spring Description: record a physical description of the spring/seep
  - Indicate the appearance of the sediments
  - Note wetted area above and below the sample point
  - Indicate expanse of discharge area
  - Indicate the size (dimensions) of any accumulation area
  - Note any rise or fall of the river stage over the sampling period and any evidence of recent high water

- River Description: record a subjective description of river water clarity (clear, colored, muddy, etc.) and other conditions at the time of sampling

- Atmospheric Conditions: record a simple description of weather conditions from the start of site preparations through completion of sampling.

6.10 SAMPLE CONTROL AND SHIPMENT

6.10.1 Sample Packaging and Shipment

Sample packaging and shipment procedures shall be those described in EII 5.11 "Sample Packaging and Shipping" (WHC 1989).

6.10.2 Chain of Custody

Maintenance of chain of custody shall be in accordance with WHC (1989).

7.0 REFERENCES

DOE-RL, 1990, *Remedial Investigation/Feasibility Study Work Plan for the 300-FF-5 Operable Unit Hanford Site, Richland, Washington*, DOE/RL 89-14, U.S. Department of Energy-Richland Field Office, Richland, Washington.

PNL, 1989, *Waste Management and Environmental Compliance Manual*, PNL-MA-8, Pacific Northwest Laboratory, Richland, Washington.

PNL, 1990, *Surface Environmental Surveillance Procedures Manual*, PNL-MA-580, Pacific Northwest Laboratory, Richland, Washington.

PNL, 1991, *Procedures for Ground-Water Investigations*, PNL-MA-567, Pacific Northwest Laboratory, Richland, Washington.

PNL, 1992, *Radiation Protection*, PNL-MA-6, Pacific Northwest Laboratory, Richland, Washington.

WHC, 1989, *Environmental Investigation and Site Characterization Manual*, WHC-CM-7-7, Westinghouse Hanford Company, Richland, Washington.

THIS PAGE INTENTIONALLY
LEFT BLANK

APPENDIX A

PROPOSED ANALYTE LIST FOR TASK 5 - SURFACE WATER AND SEDIMENT INVESTIGATION

THIS PAGE INTENTIONALLY
LEFT BLANK

Prioritized Analyte List for Task 5 - Surface Water and Sediment Investigation

If sufficient sample volume cannot be obtained the following prioritization by analyte or analyte class is provided.

Top Priority

Metals - both filtered and unfiltered
Radioisotopes
Phosphate
Volatile Organic Analyses (VOA)
Total Organic Halogen (TOX)
Nitrate
Total Suspended Solids (TSS)
Total Dissolved Solids (TDS)
Total Organic Carbon (TOC)
Coliform
Biological Oxygen Demand (BOD)
Chemical Oxygen Demand (COD)
Ammonia

Low Priority

Proposed Analyte List for Task 5 - Surface Water and Sediment Investigation
Spring Water Samples

From **Table 25.** Contaminants of Concern
for the 300-FF-5 Operable Unit. (DOE-RL 1990)

Gross alpha	Ammonium
Gross beta	~~Fluoride~~*
pH (in field)	Nitrate (as NO_3^-) (EPA 353)
Total coliform	~~Nitrite~~*
Aluminum	~~Arochlor-1248~~*
Antimony	1,2-Dichloroethene
Beryllium	Methylene chloride
Cadmium	Tetrachloroethene
Chromium	Trichloroethene
Copper	
Iron	^{60}Co
Lead - AA	^{90}Sr
Manganese	^{137}Cs
Mercury - AA	^{235}U
Nickel	^{238}U
Silver	
Zinc	

Add Phosphate to anions list
Add Potassium to metals list
Add Technetium-99 to radiochemical list
Add Tritium to radiochemical list

Perform "Others" from Table 35 as listed below:
- Biological Oxygen Demand at HEHF
- Chemical Oxygen Demand
- Dissolved Oxygen (field measurement)
- Total Organic Carbon
- Total Organic Halogen
- Total Dissolved Solids
- Total Suspended Solids

* Note: These items were deleted from the original contaminant of concern list after discussions held on August 17, 1992.

Proposed Analyte List for Task 5 - Surface Water and Sediment Investigation
Spring Water Samples

Sample Number Projections
Based on the assumption that 10 springs will be sampled:

10 fully loaded, where fully loaded is the above list
10 filtered metals analysis only
10 coliform/BOD at HEHF
10 (max) Trip blanks (VOA only); i.e., 1 per cooler
1 Method blank (VOA only)
1 Equip. blank (fully loaded) using DI water
1 Equip. blank (filtered metals analysis) using DI water
1 Equip. blank (coliform only at HEHF) using DI water
1 duplicate (fully loaded)
1 duplicate (filtered metals analysis)
1 duplicate (coliform only at HEHF)
1 Split lab sample fully loaded (Weston)
1 Split lab sample filtered metals analysis only
1 Split lab sample Trip blank (VOA only)

offsite lab 35 samples to TMA
offsite lab 3 samples to Weston
onsite lab 12 samples to HEHF

Proposed Analyte List for Task 5 - Surface Water and Sediment Investigation
Spring Sediment Samples

From **Table 25.** Contaminants of Concern
for the 300-FF-5 Operable Unit. (DOE-RL 1990)

Gross alpha	Ammonium
Gross beta	~~Fluoride~~*
pH (in field)	Nitrate (as NO_3^-)
~~Total coliform~~*	~~Nitrite~~*
Aluminum	~~Arochlor-1248~~*
Antimony	1,2-Dichloroethene
Beryllium	Methylene chloride
Cadmium	Tetrachloroethene
Chromium	Trichloroethene
Copper	
Iron	^{60}Co
Lead - AA	^{90}Sr
Manganese	^{137}Cs
Mercury - AA	^{235}U
Nickel	^{238}U
Silver	
Zinc	

Add Phosphate to Anions list
Add Potassium to metals list
Add grain size to list
Add Total Organic Carbon to list (if possible)

* Note: These items were deleted from the original contaminant of concern list after discussions held on August 17, 1992.

<u>Sample Number Projections</u>

10 fully loaded, where fully loaded is the above list
10 (max) Trip blanks (VOA only); ie, 1 per cooler
10 samples for grain size analysis
1 Method blank (VOA only)
1 Equip. blank (fully loaded) using DI water
1 duplicate (fully loaded)
1 Split lab sample fully loaded (Weston)
1 Split lab sample Trip blank (VOA only)

offsite lab 23 samples to TMA
offsite lab 2 samples to Weston
onsite lab 10 samples to WHC

Proposed Analyte List for Task 5 - Surface Water and Sediment Investigation
Groundwater Samples from 4 Wells adjacent to Spring Locations

From **Table 25.** Contaminants of Concern
for the 300-FF-5 Operable Unit. (DOE-RL 1990)

Gross alpha	Ammonium
Gross beta	~~Fluoride~~*
pH	Nitrate (as NO_3^-)
Total coliform	~~Nitrite~~*
Aluminum	~~Arochlor-1248~~*
Antimony	1,2-Dichloroethene
Beryllium	Methylene chloride
Cadmium	Tetrachloroethene
Chromium	Trichloroethene
Copper	
Iron	^{60}Co
Lead - AA	^{90}Sr
Manganese	^{137}Cs
Mercury - AA	^{235}U
Nickel	^{238}U
Silver	
Zinc	

Add Phosphate to Anions list
Add Potassium to metals list
Add Technetium-99 to radiochemical list
Add Tritium to radiochemical list

Perform "Others" from Table 35 as listed below:
- Biological Oxygen Demand at HEHF
- Chemical Oxygen Demand
- Dissolved Oxygen (field measurement)
- Total Organic Carbon
- Total Organic Halogen
- Total Dissolved Solids
- Total Suspended Solids

* Note: These items were deleted from the original contaminant of concern list after discussions held on August 17, 1992.

Proposed Analyte List for Task 5 - Surface Water and Sediment Investigation
Groundwater Samples from 4 Wells adjacent to Spring Locations

Sample Number Projections
- 4 fully loaded, where fully loaded is the above list
- 4 filtered metals analysis only
- 4 coliform/BOD at HEHF
- 1 Split lab sample fully loaded (Weston)
- 1 Split lab sample filtered metals analysis only
- 1 Split lab sample Trip blank (VOA only)

Maximum numbers:
offsite lab 8 samples to TMA
offsite lab 3 samples to Weston
onsite lab 4 samples to HEHF

Note: Use blanks (trip, method, and equip.) and duplicates from the spring water and nearshore river water samples to cover Task 5 sampling QC requirements since this activity is simultaneous with the spring water and nearshore river water sampling.

Proposed Analyte List for Task 5 - Surface Water and Sediment Investigation
Near Shore River Water Samples

From Table 25. Contaminants of Concern
for the 300-FF-5 Operable Unit. (DOE-RL 1990)

Gross alpha	Ammonium
Gross beta	~~Fluoride~~*
pH	Nitrate (as NO_3^-)
Total coliform	~~Nitrite~~*
Aluminum	~~Arochlor-1248~~*
Antimony	1,2-Dichloroethene
Beryllium	Methylene chloride
Cadmium	Tetrachloroethene
Chromium	Trichloroethene
Copper	
Iron	^{60}Co
Lead - AA	^{90}Sr
Manganese	^{137}Cs
Mercury - AA	^{235}U
Nickel	^{238}U
Silver	
Zinc	

Add Phosphate to Anions list
Add Potassium to metals list
Add Technetium-99 to radiochemical list
Add Tritium to radiochemical list

Perform "Others" from Table 35 as listed below:
- Biological Oxygen Demand at HEHF
- Chemical Oxygen Demand
- Dissolved Oxygen (field measurement)
- Total Organic Carbon
- Total Organic Halogen
- Total Dissolved Solids
- Total Suspended Solids

* Note: These items were deleted from the original contaminant of concern list after discussions held on August 17, 1992.

Proposed Analyte List for Task 5 - Surface Water and Sediment Investigation
Near Shore River Water Samples

Sample Number Projections
Based on the assumption of 4 samples at each of 10 spring locations. This may be altered in the field if conditions, such as overlapping sampling areas, warrant. These are therefore maximum numbers.

40 fully loaded, where fully loaded is the above list
40 filtered metals analysis only
10 coliform/BOD at HEHF from sampling location 2 only per Figure 43 on page WP-182 (DOE-RL 1990)
40 (max) Trip blanks (VOA only); i.e., 1 per cooler
2 Method blank (VOA only)
2 Equip. blank (fully loaded) using DI water
2 Equip. blank (filtered metals analysis) using DI water
1 Equip. blank (coliform only at HEHF) using DI water
2 duplicate (fully loaded)
2 duplicate (filtered metals analysis)
1 duplicate (coliform only at HEHF)
2 Split lab sample fully loaded (Weston)
2 Split lab sample filtered metals analysis only
2 Split lab sample Trip blank (VOA only)

offsite lab 130 samples to TMA
offsite lab 6 samples to Weston
onsite lab 12 samples to HEHF

Total number of Task 5 samples

offsite lab 196 samples to TMA
offsite lab 14 samples to Weston
onsite lab 28 samples to HEHF
onsite lab 10 samples to WHC

APPENDIX B

SAMPLING AUTHORIZATION FORMS AND SAMPLING REQUIREMENTS FOR TASK 5 - SURFACE WATER AND SEDIMENT INVESTIGATION

THIS PAGE INTENTIONALLY
LEFT BLANK

OFFICE OF SAMPLE MANAGEMENT
SAMPLING AUTHORIZATION FORM
SAF # 92-284

SPRING WATER

REV. 0 DATE: 8-14-92

PROJECT NUMBER 92-264 PROJECT TITLE 300-FF-5 Task 5 Spring Water Sampling

OSM PROJECT COORDINATOR W. E. Strohben OPERABLE UNIT/TSD 300-FF-5

CUSTOMER NAME L. C. Hulstrom PHONE # 376-4034 MSIN H4-55

ORGANIZATION/CODE 81222 CHARGE CODE PC2CD

SAMPLING DATE After 8-21-92 NUMBER OF SAMPLES 35 SAMPLING LOCATION 300-FF-5

SAMPLE PRIORITY: 1. EXPEDITED RESPONSE ACTION
2. X TPA RANKING _____
3. NON-TPA RANKING _____

ANALYTICAL PROTOCOLS: X CERCLA RCRA OTHER (specify) _____

DATA TURNAROUND REQUIREMENTS: PRIORITY X REGULAR X RADCHEM

SAMPLE MATRIX: SOIL/SEDIMENT X WATER VEGETATION OILS
SLUDGE CONCRETE OTHER _____

LABORATORY SERVICES ON-SITE X OFF-SITE

LABORATORY

TMA (Main)

Weston/Ecotek (Split)

HEHF

COMMENTS:

1) All coliform and BOD aliquots are to be sent to HEHF. The aliquots going to HEHF will require a separate HEIS number from the aliquots that will be going to TMA or Weston.

2) All TOC and TOX aliquots will be sent to the WESTON lab for analysis and will require individual HEIS sample numbers.

OFFICE OF SAMPLE MANAGEMENT
FIELD SAMPLING REQUIREMENTS

92-284
SAF Number

Requirements are for TMA

SPRING WATER

REV 0 8/14/92

PARAMETER/ ANALYSIS	ANALYTICAL METHODS	CONTAINER[1]/ VOLUME	PRESERVATION	HOLDING TIME
1. VOA	CLP	Gs 3X40ml	None	14 DAYS
2. ANIONS(IC) PO_4	EPA 300.0	P 1000ml	None	28 DAYS
pH	SW-846 9040			ASAP
3. ANIONS — NO_3-NO_2	EPA 353.3	P 500ml	H_2SO_4	28 DAYS
4. TOTAL SUSPENDED SOLIDS	EPA 160.2	Q 1000ml	None	7 DAYS
TOTAL DISSOLVED SOLIDS	EPA 160.1			7 DAYS
5. AMMONIA	EPA 350.3	Q 500ml	H_2SO_4 pH<2	28 DAYS
CHEMICAL OXYGEN DEMAND	EPA 410.1			
6. ICP METALS/AA FOR Pb	CLP	P 1000ml	HNO_3	6 MONTHS
Hg	CLP			28 DAYS
7. TOC	415.1	60s 125ml	H_2SO_4	28 DAYS
8. TOX	SW-846 9020	60s 250ml	H_2SO_4	7 DAYS
9. GROSS ALPHA	EA-82	G/P 5000ml	HNO_3	6 MONTHS
GROSS BETA	EA-82			
GAMMA SPEC	EA-30			
— Alpha Spec. To include:				
U 235,238	EP-70, EP-71, EP-5			
Sr-90	RC-306, RC-303, RC-309, RC-304			
10. Tc-99	RC-24, RC-604	G/P 1000ml	HCl	6 MONTHS
11. TRITIUM	EP-20	Gs 500ml	None	6 MONTHS
12. TOT. (Rad)	SW-9221	As provided by HEHF	$Na_2S_2O_3$	6 hours
13. BOD	EPA 405.1	1000ml	None	48 hours
14. TOTAL ACTIVITY	LA-548-111 LA-500-121	G or P small vial (at least 1g)	None	ASAP

[1] Container Types:

P = Plastic (Polyethelene) T = Fluorocarbon Resins
G = Glass PP = Polypropylene

[2] 7 DAYS FOR EXTRACTION, 40 DAYS AFTER SO_4

OFFICE OF SAMPLE MANAGEMENT
FIELD SAMPLING REQUIREMENTS

92-284
SAF Number

Requirements are for WESTON

SPRING WATER

REV 0 8/14/92

PARAMETER/ ANALYSIS	ANALYTICAL METHODS	CONTAINER[1]/ VOLUME	PRESERVATION	HOLDING TIME
1.VOA	CLP	Gs 2X40ml	None	14 DAYS
2.ANIONS(IC) PO_4	EPA 300.0	P 500mL	None	28 DAYS
pH	SW-846 9040			ASAP
3.NO_3-NO_2	EPA 353.3	P 250ml	H_2SO_4	28 DAYS
4.TOTAL SUSPENDED SOLIDS	EPA 160.2	P 500ml	None	7 DAYS
TOTAL DISSOLVED SOLIDS	EPA 160.1			7 DAYS
5.AMMONIA	EPA 350.3	G 500ml	H_2SO_4 pH<2	28 DAYS
CHEMICAL OXYGEN DEMAND	EPA 410.1			
6.ICP METALS/AA FOR Pb	CLP	P 1000ml	HNO_3	6 MONTHS
Hg	CLP			28 DAYS
7.PCB (Oil)	SW-9221	1gal provided by HERF	$NaAsO_2$	14 days
8.BOD	EPA-405.1	1000ml	None	48 hours
9. TOC	415.1	aGs 125ml	H_2SO_4	28 DAYS
10.TOX	SW-846 9020	aGs 250ml	H_2SO_4	7 DAYS
11.GROSS ALPHA	RL-2302	G/P 5000ml	HNO_3	6 MONTHS
GROSS BETA	RL-2302			
GAMMA SPEC	RL-4303, RL-4304			
Alpha Spec.				
To include:				
U 235,238	RL-2322			
Sr-90	RL-2314			
12. Tc-99	RL-2317	G/P 1000ml	HCl	6 MONTHS
13. TRITIUM	RL-2320	Gs 500ml	None	6 MONTHS
14. TOTAL ACTIVITY	LA-548-111 LA-508-121	G or P small vial (at least 1g)	None	ASAP

[1] Container Types:

P = Plastic (Polyethelene) T = Fluorocarbon Resins
G = Glass PP = Polypropylene

[2] 7 DAYS FOR EXTRACTION, 40 DAYS AFTER

OFFICE OF SAMPLE MANAGEMENT
SAMPLING AUTHORIZATION FORM
SAF # 92-285

SPRING SEDIMENT

REV. 0 DATE: 8-14-92

PROJECT NUMBER 92-265 PROJECT TITLE 300-FF-5 Task 5 Spring Sediment Sampling

OSM PROJECT COORDINATOR W. E. Strohben OPERABLE UNIT/TSD 300-FF-5

CUSTOMER NAME L. C. Hulstrom PHONE # 376-4034 MSIN H4-55

ORGANIZATION/CODE 81222 CHARGE CODE PC2CD

SAMPLING DATE After 8-21-92 NUMBER OF SAMPLES 20 SAMPLING LOCATION 300-FF-5

SAMPLE PRIORITY: 1. EXPEDITED RESPONSE ACTION
2. X TPA RANKING _____
3. NON-TPA RANKING _____

ANALYTICAL PROTOCOLS: X CERCLA RCRA OTHER (specify) _____

DATA TURNAROUND REQUIREMENTS: PRIORITY X REGULAR X RADCHEM

SAMPLE MATRIX: X SOIL/SEDIMENT WATER VEGETATION OILS
SLUDGE CONCRETE OTHER _____

LABORATORY SERVICES ON-SITE X OFF-SITE

LABORATORY

TMA (Main)

Weston/Ecotek (Split)

COMMENTS:

PAGE 1 OF 1

9312750045 3

OFFICE OF SAMPLE MANAGEMENT
FIELD SAMPLING REQUIREMENTS

92-285
SAF Number

Requirements are for Weston

SPRING SEDIMENT

REV 0 8\14\92

PARAMETER/ ANALYSIS	ANALYTICAL METHODS	CONTAINER[1]/ VOLUME	PRESERVATION	HOLDING TIME
1. VOA	CLP	G 2x125ml	None	14 DAYS
2. ANIONS(IC) PO_4	EPA 300.0	G 500ml	None	28 DAYS
NO_3-NO_2	EPA 363.3			28 DAYS
pH	SW-846 9040			ASAP
AMMONIA	350.3			28 DAYS
4. ICP METALS/AA FOR Pb	CLP	G 250ml	None	6 MONTHS
Hg	CLP			28 DAYS
5. GROSS ALPHA	RL-2302	G/P 1000ml	None	6 MONTHS
GROSS BETA	RL-2302			
GAMMA SPEC	RL-4303,RL-4304			
Alpha Spec. To include:				
U 235,238	RL-2322			
Sr-90	RL-2314			
6. TOTAL ACTIVITY	LA-548-111 LA-508-121	G or P small vial (at least 1g)	None	ASAP

[1] Container Types:

P = Plastic (Polyethelene) T = Fluorocarbon Resins
G = Glass PP = Polypropylene

[2] 7 DAYS FOR EXTRACTION, 40 DAYS AFTER

PAGE 1 OF 1

OFFICE OF SAMPLE MANAGEMENT
SAMPLING AUTHORIZATION FORM
SAF # 92-286

REV. 0 DATE: 8-14-92

PROJECT NUMBER 92-266 PROJECT TITLE 300-FF-5 Ground Water near Spring Locations

OSM PROJECT COORDINATOR W. E. Strohben OPERABLE UNIT/TSD 300-FF-5

CUSTOMER NAME L. C. Hulstrom PHONE # 376-4034 MSIN H4-55

ORGANIZATION/CODE 81222 CHARGE CODE PC2CD

SAMPLING DATE After 8-21-92 NUMBER OF SAMPLES 11 SAMPLING LOCATION 300-FF-5

SAMPLE PRIORITY: 1. EXPEDITED RESPONSE ACTION
2. X TPA RANKING _____
3. NON-TPA RANKING _____

ANALYTICAL PROTOCOLS: X CERCLA RCRA OTHER (specify) _____

DATA TURNAROUND REQUIREMENTS: PRIORITY X REGULAR X RADCHEM

SAMPLE MATRIX: SOIL/SEDIMENT X WATER VEGETATION OILS
SLUDGE CONCRETE OTHER _____

LABORATORY SERVICES ON-SITE X OFF-SITE

LABORATORY

TMA (Main)

Weston/Ecotek (Split)

HEHF

COMMENTS:

1) All coliform and BOD aliquots are to be sent to HEHF. The aliquots going to HEHF will require a separate HEIS number from the aliquots that will be going to TMA or Weston.

2) All TOC and TOX aliquots will be sent to the WESTON lab for analysis and will require individual HEIS sample numbers.

OFFICE OF SAMPLE MANAGEMENT
FIELD SAMPLING REQUIREMENTS

92-286
SAF Number

Requirements are for WESTON

Ground Water near Spring Locations

REV 0 8/14/92

PARAMETER/ ANALYSIS	ANALYTICAL METHODS	CONTAINER[1]/ VOLUME	PRESERVATION	HOLDING TIME
1.VOA	CLP	Gs 2X40ml	None	14 DAYS
2.ANIONS(IC) PO_4	EPA 300.0	P 500mL	None	28 DAYS
pH	SW-846 9040			ASAP
3.NO_3-NO_2	EPA 353.3	P 250ml	H_2SO_4	28 DAYS
4.TOTAL SUSPENDED SOLIDS	EPA 160.2	P 500ml	None	7 DAYS
TOTAL DISSOLVED SOLIDS	EPA 160.1			7 DAYS
5.AMMONIA	EPA 350.3	G 500ml	H_2SO_4 pH<2	28 DAYS
CHEMICAL OXYGEN DEMAND	EPA 410.1			
6.ICP METALS/AA FOR Pb	CLP	P 1000ml	HNO_3	6 MONTHS
Hg	CLP			28 DAYS
7.COLIFORM	SM-9221	125 prepacked by HERL	$Na_2S_2O_3$	6 Hours
8.BOD	EPA-405.1	1000ml	None	48 hours
9. TOC	415.1	aGs 125ml	H_2SO_4	28 DAYS
10. TOX	SW-846 9020	aGs 250ml	H_2SO_4	7 DAYS
11.GROSS ALPHA	RL-2302	G/P 5000ml	HNO_3	6 MONTHS
GROSS BETA	RL-2302			
GAMMA SPEC	RL-4303, RL-4304			
Alpha Spec. To include:				
U 235,238	RL-2322			
Sr-90	RL-2314			
12. Tc-99	RL-2317	G/P 1000ml	HCl	6 MONTHS
13. TRITIUM	RL-2320	Gs 500ml	None	6 MONTHS
14. TOTAL ACTIVITY	LA-548-111 LA-508-121	G or P small vial (at least 1g)	None	ASAP

[1] Container Types:

P = Plastic (Polyethelene) T = Fluorocarbon Resins
G = Glass PP = Polypropylene

[2] 7 DAYS FOR EXTRACTION, 40 DAYS AFTER

OFFICE OF SAMPLE MANAGEMENT
FIELD SAMPLING REQUIREMENTS

92-286
SAF Number

Requirements are for TMA

Ground Water near Spring Locations

REV 0

8/14/92

PARAMETER/ ANALYSIS	ANALYTICAL METHODS	CONTAINER[1]/ VOLUME	PRESERVATION	HOLDING TIME
1.VOA	CLP	G 3X40ml	None	14 DAYS
2.ANIONS(IC) PO_4	EPA 300.0	P 1000ml	None	28 DAYS
pH	SW-846 9040			ASAP
3. ANIONS NO_3-NO_2	EPA 353.3	P 500ml	H_2SO_4	28 DAYS
4.TOTAL SUSPENDED SOLIDS	EPA 160.2	G 1000ml	None	7 DAYS
TOTAL DISSOLVED SOLIDS	EPA 160.1			7 DAYS
5.AMMONIA	EPA 350.3	G 500ml	H_2SO_4 pH<2	28 DAYS
CHENICAL OXYGEN DEMAND	EPA 410.1			
6.ICP METALS/AA FOR Pb	CLP	P 1000ml	HNO_3	6 MONTHS
Hg	CLP			28 DAYS
7.TOC	415.1	AG 125ml	H_2SO_4	28 DAYS
8.TOX	SW-846 9020	AG 250ml	H_2SO_4	7 DAYS
9.GROSS ALPHA	EA-82	G/P 5000ml	HNO_3	6 MONTHS
GROSS BETA	EA-82			
GAMMA SPEC	EA-30			
Alpha Spec. To include:				
U 235,238	EP-70, EP-71, EP-5			
Sr-90	RC-306, RC-303, RC-309, RC-304			
10. Tc-99	RC-24, RC-604	G/P 1000ml	HCl	6 MONTHS
11. TRITIUM	EP-20	G 500ml	None	6 MONTHS
12.COLIFORM	SM-9221	100 provided by HEHF	$Na_2S_2O_3$	6 hours
13.BOD	EPA 405.1	1000ml	None	48 hours
14. TOTAL ACTIVITY	LA-548-111 LA-508-121	G or P small vial (at least 1g)	None	ASAP

[1] Container Types:

P = Plastic (Polyethelene) T = Fluorocarbon Resins
G = Glass PP = Polypropylene

[2] 7 DAYS FOR EXTRACTION, 40 DAYS AFTER SO_4

OFFICE OF SAMPLE MANAGEMENT
SAMPLING AUTHORIZATION FORM
SAF # 92-287

NEAR SHORE RIVER WATER

REV. 0 DATE: 8-14-92

PROJECT NUMBER 92-287 PROJECT TITLE 300-FF-5 Task 5 Near Shore River Water

OSM PROJECT COORDINATOR W. E. Strohben OPERABLE UNIT/TSD 300-FF-5

CUSTOMER NAME L. C. Hulstrom PHONE # 376-4034 MSIN H4-55

ORGANIZATION/CODE 81222 CHARGE CODE PC2CD

SAMPLING DATE After 8-21-92 NUMBER OF SAMPLES 80 SAMPLING LOCATION 300-FF-5

SAMPLE PRIORITY: 1. EXPEDITED RESPONSE ACTION
2. X TPA RANKING _____
3. NON-TPA RANKING _____

ANALYTICAL PROTOCOLS: X CERCLA RCRA OTHER (specify) _____

DATA TURNAROUND REQUIREMENTS: PRIORITY X REGULAR X RADCHEM

SAMPLE MATRIX: SOIL/SEDIMENT X WATER VEGETATION OILS
SLUDGE CONCRETE OTHER _____

LABORATORY SERVICES ON-SITE X OFF-SITE

LABORATORY

TMA (Main)

Weston/Ecotek (Split)

HEHF

COMMENTS:

1) All coliform and BOD aliquots are to be sent to HEHF. The aliquots going to HEHF will require a separate HEIS number from the aliquots that will be going to TMA or Weston.

2) All TOC and TOX aliquots will be sent to the WESTON lab for analysis and will require individual HEIS sample numbers.

OFFICE OF SAMPLE MANAGEMENT
FIELD SAMPLING REQUIREMENTS

92-287
SAF Number

Requirements are for TMA

NEAR SHORE RIVER WATER

REV 0

8/14/92

PARAMETER/ ANALYSIS	ANALYTICAL METHODS	CONTAINER[1]/ VOLUME	PRESERVATION	HOLDING TIME
1. VOA	CLP	Gs 3x40ml	None	14 DAYS
2. ANIONS(IC) PO_4	EPA 300.0	P 1000ml	None	28 DAYS
pH	SW-846 9040			ASAP
3. ANIONS NO_3-NO_2	EPA 353.3	P 500ml	H_2SO_4	28 DAYS
4. TOTAL SUSPENDED SOLIDS	EPA 160.2	G 1000ml	None	7 DAYS
TOTAL DISSOLVED SOLIDS	EPA 160.1			7 DAYS
5. AMMONIA	EPA 350.3	G 500ml	H_2SO_4 pH<2	28 DAYS
CHEMICAL OXYGEN DEMAND	EPA 410.1			
6. ICP METALS/AA FOR Pb	CLP	P 1000ml	HNO_3	6 MONTHS
Hg	CLP			28 DAYS
7. TOC	415.1	AGs 125ml	H_2SO_4	28 DAYS
8. TOX	SW-846 9020	AGs 250ml	H_2SO_4	7 DAYS
9. GROSS ALPHA	EA-82	G/P 5000ml	HNO_3	6 MONTHS
GROSS BETA	EA-82			
GAMMA SPEC	EA-30			
Alpha Spec. To include:				
U 235,238	EP-70, EP-71, EP-5			
Sr-90	RC-306, RC-303, RC-309, RC-304			
10. Tc-99	RC-24, RC-604	G/P 1000ml	HCl	6 MONTHS
11. TRITIUM	EP-20	Gs 500ml	None	6 MONTHS
12. Coliform	SM-9221	PS provided by HEHF	$Na_2S_2O_3$	6 hours
13. BOD	EPA 405.1	1000ml	None	48 hours
14. TOTAL ACTIVITY	LA-548-111 LA-508-121	G or P small vial (at least 1g)	None	ASAP

[1] Container Types:

P = Plastic (Polyethelene) T = Fluorocarbon Resins
G = Glass PP = Polypropylene

[2] 7 DAYS FOR EXTRACTION, 40 DAYS AFTER SO_4

OFFICE OF SAMPLE MANAGEMENT
FIELD SAMPLING REQUIREMENTS

92-287
SAF Number

Requirements are for WESTON

NEAR SHORE RIVER WATER

REV 0 8/14/92

PARAMETER/ ANALYSIS	ANALYTICAL METHODS	CONTAINER[1]/ VOLUME	PRESERVATION	HOLDING TIME
1. VOA	CLP	Gs 2X40ml	None	14 DAYS
2. ANIONS(IC) PO_4	EPA 300.0	P 500mL	None	28 DAYS
pH	SW-846 9040			ASAP
3. NO_3-NO_2	EPA 353.3	P 250ml	H_2SO_4	28 DAYS
4. TOTAL SUSPENDED SOLIDS	EPA 160.2	P 500ml	None	7 DAYS
5. TOTAL DISSOLVED SOLIDS	EPA 160.1			7 DAYS
5. AMMONIA	EPA 350.3	G 500ml	H_2SO_4 pH<2	28 DAYS
CHEMICAL OXYGEN DEMAND	EPA 410.1			
6. ICP METALS/AA FOR Pb	CLP	P 1000ml	HNO_3	6 MONTHS
Hg	CLP			28 DAYS
7. COLIFORM	SM-9221	#4 Provided by WESF	$Na_2S_2O_3$	6 hours
8. BOD	EPA 405.1	1000ml	None	48 hours
9. TOC	415.1	aGs 125ml	H_2SO_4	28 DAYS
10. TOX	SW-846 9020	aGs 250ml	H_2SO_4	7 DAYS
11. GROSS ALPHA	RL-2302	G/P 5000ml	HNO_3	6 MONTHS
GROSS BETA	RL-2302			
GAMMA SPEC	RL-4303, RL-4304			
Alpha Spec. To Include:				
U 235,238	RL-2322			
Sr-90	RL-2314			
12. Tc-99	RL-2317	G/P 1000ml	HCl	6 MONTHS
13. TRITIUM	RL-2320	Gs 500ml	None	6 MONTHS
14. TOTAL ACTIVITY	LA-548-111	G or P small vial (at least 1g)	None	ASAP
	LA-508-121			

[1] Container Types:

P = Plastic (Polyethelene) T = Fluorocarbon Resins
G = Glass PP = Polypropylene

[2] 7 DAYS FOR EXTRACTION, 40 DAYS AFTER

THIS PAGE INTENTIONALLY
LEFT BLANK